
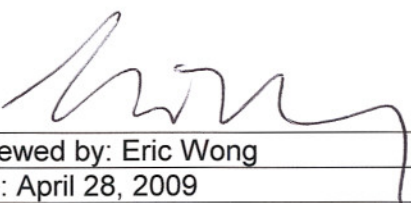
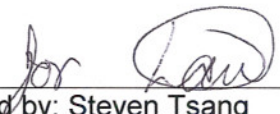


TEST REPORT N°: STM-09MA164ETHP

TEST REPORT

To:	STORM ELECTRONICS CO. LTD.	To:	-
Attn:	CHERRY LAW	Attn:	-
Address:	22/F., COM WEB PLAZA, 12 CHEUNG YUE ST., CHEUNG SHA WAN, KOWLOON, HK	Address:	-
Fax:	27448440	Fax:	-
E-mail:	cherry@storm.com.hk	E-mail:	-
Offer No.:	STM-09MA16-01ETHP-A0		
Factory name:	ZHUHAI YUEHUA ELECTRONIC CO.,LTD.		
Location:	13, NO.4, PING DONG RD., NANPING TECHNOLOGY DISTRICT, ZHUHAI, CHINA 519060		
Product:	PS 2 WIRELESS DONGLE MODEL: KT2C-0201		
		Sample No:	HK090313/009
		Test date:	March 25, 2009 to March 28, 2009
		Test Requested:	FCC Part 15 - 2008
		Test Method:	ANSI C63.4 - 2003
		FCC ID:	VU5P2CO-045-01
The results given in this report are related to the tested specimen of the described electrical apparatus.			
CONCLUSION: The submitted sample was found to COMPLY with requirement of FCC Part 15 Subpart C.			
Authorized Signature:			
			
Reviewed by: Eric Wong		Approved by: Steven Tsang	
Date: April 28, 2009		Date: April 28, 2009	



TEST REPORT N°: STM-09MA164ETHP

Location of the test site

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. An Open Area Test Site and Full Anechoic Chamber (FCC Listed Site, Registration No. 642151) are set up for investigation and located at :

BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE

No. 2106-2107, 21/F., Westin Centre,
26 Hung To Road,
Kwun Tong, Kowloon,
Hong Kong

List of measuring equipment

Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	18-AUG-2009
HF LOOP ANTENNA	SCHAFFNER	HLA 6120	21728	14-NOV-2009
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	31-JAN-2010
OPEN AREA TEST SITE	BVCPS	N/A	N/A	05-JULY-2009
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	09-JULY-2009
HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-692	29-JULY-2009
PREAMPLIFIER	SCHWARZBECK	BBV9718	9718-152	22-JULY-2009
COAXIAL CABLE	SUHNER	N/A	N/A	23-JULY-2009
SPECTRUM ANALYZER	ADVANTEST	R3127	111000909	02-DEC-2009

Conducted Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCS30	830986/030	18-SEP-2009
LISN	R&S	ENV216	100024	25-MAR-2009

Remarks:-

N/A : Not Applicable or Not Available

The measurement instrumentation uncertainty would be taking into consideration on each of the test result

TEST REPORT N°: STM-09MA164ETHP

Equipment Under Test [EUT]

Description of Sample:

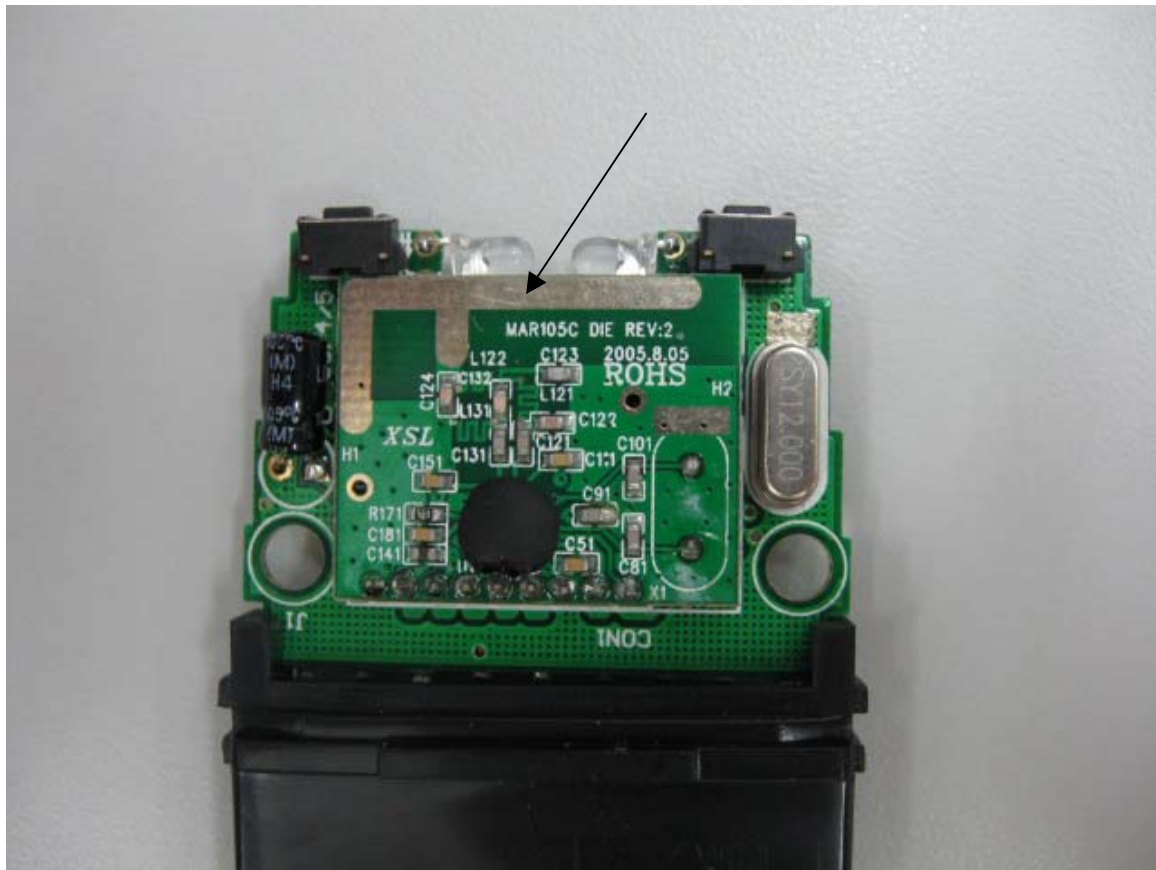
Model Name: PS 2 WIRELESS DONGLE
Model Number: KT2C-0201
Rating: Power supply by PS2

Description of EUT Operation:

The Equipment Under Test (EUT) is a STORM ELECTRONICS CO. LTD. of Remote Control Transmitter. The transmitter is 1 buttons transmitter (For reset to search mode) and operating at 2410.00-2469.20MHz. The EUT continues to transmit while EUT connected to PS2 (Search mode), Modulation by IC, and type is MSK modulation.

Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna is not replaceable or user serviceable. The requirement of S15.203 are met. There are no deviations or exceptions to the specifications.



TEST REPORT N°: STM-09MA164ETHP

Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249

Test Method: ANSI C63.4

Test Date(s): 2009-03-28

Mode of Operation: Transmission continuously, connected to PS 2

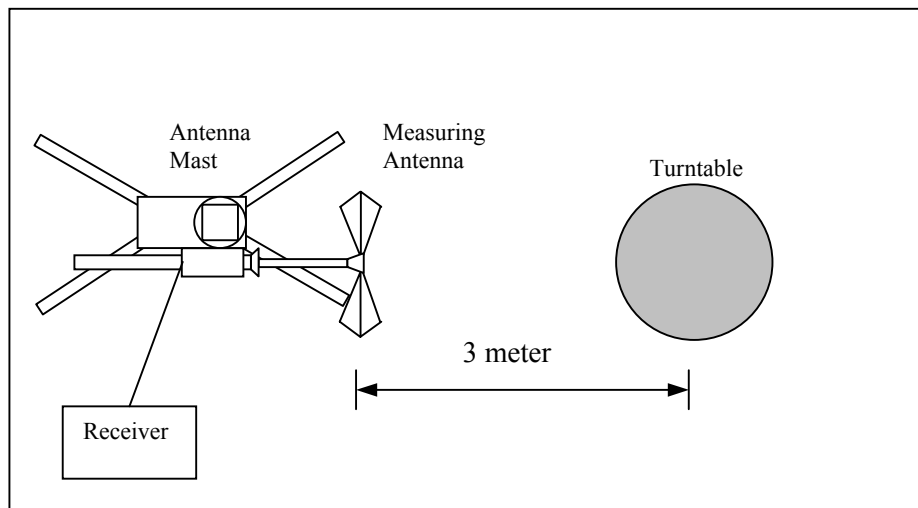
Test Procedure:

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

Test Setup: Open Area Test Site





TEST REPORT N°: STM-09MA164ETHP

Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission (Average) [mV/m]	Field Strength of Harmonics Emission (Average) [μV/m]
2400 – 2483.5	50	500

Measurement Data : Lowest, Middle and highest Channel

Test Result of (Transmission continuously, connected to PS 2): PASS

Detection mode: Peak

Frequency (MHz)	Polarity (H/V) and degree	EUT Orientation	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
2410.00	H	Front side	32.0	70.3	94.0	-23.7
2440.00	H	Front side	32.0	71.3	94.0	-22.7
2469.20	H	Front side	32.0	74.2	94.0	-19.8

Note: EUT Orientation is shown as Set up photo.

Field Strength includes Antenna Factor, Cable Loss and Preamplifier gain

Receiver setting: RBW = 1MHz
VBW = 1MHz



TEST REPORT N°: STM-09MA164ETHP

Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249

Test Method: ANSI C63.4

Test Date(s): 2009-03-28

Mode of Operation: Transmission continuously, connected to PS 2

Measurement Data: Lowest, Middle and highest Channel

Test Result of (Transmission continuously, connected to PS 2): PASS

Detection mode: Peak

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
2390.00	H	32.0	34.5	74.0	-39.5
4820.00	H	38.3	47.0	74.0	-27.0
7230.00	H	45.3	52.0	74.0	-22.0
9640.00	H	49.0	52.3	74.0	-21.7
12050.00	H	51.8	57.0	74.0	-17.0
14460.00	V	57.0	61.0	74.0	-13.0
16870.00	V	57.0	63.4	74.0	-10.6
19280.00	V	57.4	64.3	74.0	-9.7
21690.00	V	58.2	65.5	74.0	-8.5
24100.00	V	58.8	66.3	74.0	-7.7
4880.00	V	38.4	46.9	74.0	-27.1
7320.00	H	45.3	50.9	74.0	-23.1
9760.00	V	49.4	54.7	74.0	-19.3
12200.00	V	51.9	57.6	74.0	-16.4
14640.00	H	56.9	61.1	74.0	-12.9
17080.00	V	57.5	64.0	74.0	-10.0
19520.00	V	57.9	64.4	74.0	-9.6
21960.00	V	58.3	65.1	74.0	-8.9
24440.00	V	58.9	66.5	74.0	-7.5



TEST REPORT N°: STM-09MA164ETHP

2483.50	H	32.1	35.2	74.0	-38.8
4938.40	H	38.5	45.4	74.0	-28.6
7407.60	H	45.5	51.8	74.0	-22.2
9876.80	V	49.6	54.7	74.0	-19.3
12346.00	H	51.6	57.2	74.0	-16.8
14815.20	H	56.6	63.9	74.0	-10.1
17284.40	H	58.4	64.9	74.0	-9.1
19753.60	V	58.5	65.3	74.0	-8.7
22222.80	V	59.2	66.4	74.0	-7.6
24690.00	V	59.6	67.7	74.0	-6.3

Measurement Data

Test Result of (Transmission continuously, connected to PS 2): PASS

Detection mode: Average

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
2390.00	H	32.0	19.3	54.0	-34.7
4820.00	H	38.3	31.8	54.0	-22.2
7230.00	H	45.3	36.8	54.0	-17.2
9640.00	H	49.0	37.1	54.0	-16.9
12050.00	H	51.8	41.8	54.0	-12.2
14460.00	V	57.0	45.8	54.0	-8.2
16870.00	V	57.0	48.2	54.0	-5.8
19280.00	V	57.4	49.1	54.0	-4.9
21690.00	V	58.2	50.3	54.0	-3.7
24100.00	V	58.8	51.1	54.0	-2.9

TEST REPORT N°: STM-09MA164ETHP

4880.00	V	38.4	31.7	54.0	-22.3
7320.00	H	45.3	35.7	54.0	-18.3
9760.00	V	49.4	39.5	54.0	-14.5
12200.00	V	51.9	42.4	54.0	-11.6
14640.00	H	56.9	45.9	54.0	-8.1
17080.00	V	57.5	48.8	54.0	-5.2
19520.00	V	57.9	49.2	54.0	-4.8
21960.00	V	58.3	49.9	54.0	-4.1
24440.00	V	58.9	51.3	54.0	-2.7
2483.50	H	32.1	20.0	54.0	-34.0
4938.40	H	38.5	30.2	54.0	-23.8
7407.60	H	45.5	36.6	54.0	-17.4
9876.80	V	49.6	39.5	54.0	-14.5
12346.00	H	51.6	42.0	54.0	-12.0
14815.20	H	56.6	48.7	54.0	-5.3
17284.40	H	58.4	49.7	54.0	-4.3
19753.60	V	58.5	50.1	54.0	-3.9
22222.80	V	59.2	51.2	54.0	-2.8
24690.00	V	59.6	52.5	54.0	-1.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\log(0.174) = -15.2\text{dB}$

Note: Field Strength includes Antenna Factor, Cable Loss and Preamplifier gain

Receiver setting: RBW = 1MHz
VBW = 1MHz



TEST REPORT N°: STM-09MA164ETHP

Radiated Emissions (30MHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209

Test Method: ANSI C63.4

Test Date(s): 2009-03-27

Mode of Operation: Search mode with PS2

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μ V/m]
1.705-30	300
30-88	100
88-216	150
216-960	200
Above960	500

Measurement Data

Test Result of (Search mode with PS2): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
162.00	H	22.7	43.5	-20.8
223.60	V	19.4	46.0	-26.6
237.08	H	24.6	46.0	-21.4
254.60	H	20.2	46.0	-25.8
304.84	H	26.2	46.0	-19.8
338.68	H	24.4	46.0	-21.6

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
VBW = 120KHz



TEST REPORT N°: STM-09MA164ETHP

Conducted Emissions (150kHz to 30MHz)

Test Requirement: FCC Part 15 Section 15.207

Test Method: ANSI C63.4

Test Limits: Class B

Test Date(s): 2009-03-25

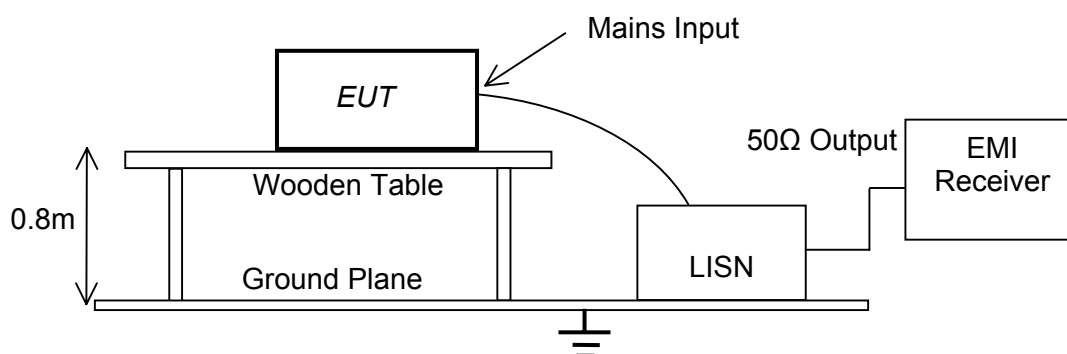
Mode of Operation: On mode, connected to PS2 (Transmitting and Receiving)

Test Procedure:

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. The EUT was setup as described in the procedures, and both lines were measured.

Initial measurements were performed in peak and average detection modes on the live line, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:



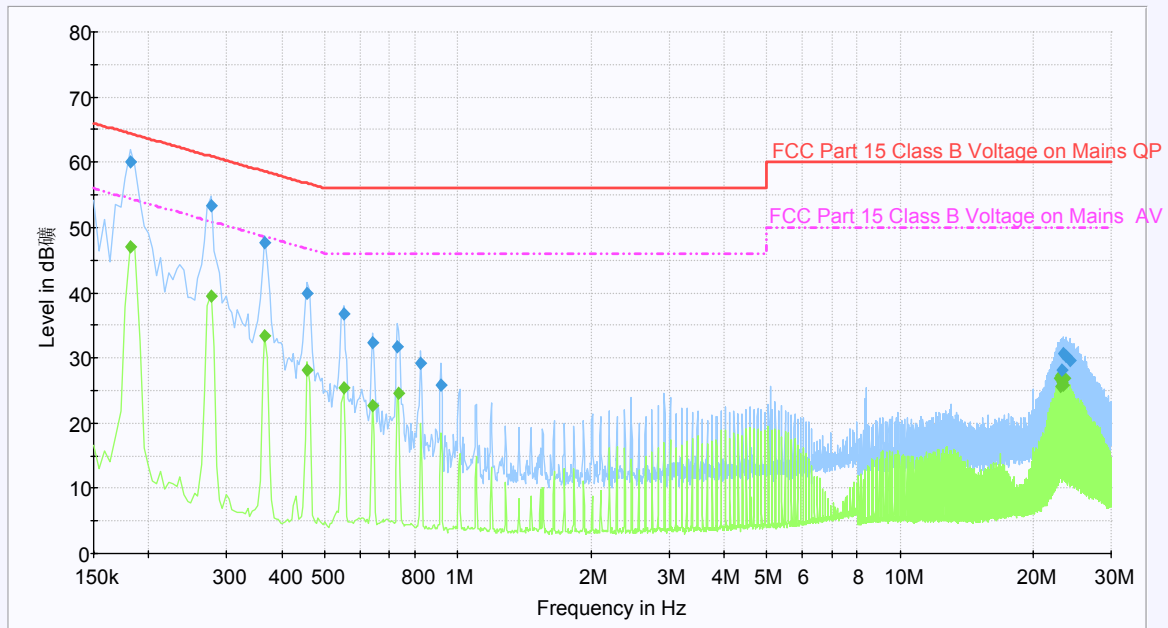
TEST REPORT N°: STM-09MA164ETHP

Measurement Data : Live

Test Result of (On mode, connected to PS2): PASS

Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.



Frequency (MHz)	QuasiPeak (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.181500	60.0	L1	9.9	4.4	64.4
0.276000	53.4	L1	9.9	7.5	60.9
0.366000	47.6	L1	9.9	11.0	58.6
0.550500	36.7	L1	10.0	19.3	56.0
0.825000	29.2	L1	10.0	26.8	56.0
24.193500	29.6	L1	10.1	30.4	60.0
Frequency (MHz)	Average (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.181500	47.1	L1	9.9	7.3	54.4
0.276000	39.6	L1	9.9	11.3	50.9
0.366000	33.5	L1	9.9	15.1	48.6
0.550500	25.4	L1	10.0	20.6	46.0
0.640500	22.6	L1	9.9	23.4	46.0
0.735000	24.5	L1	9.9	21.5	46.0
22.821000	26.8	L1	10.0	23.2	50.0
23.001000	25.6	L1	10.0	24.4	50.0

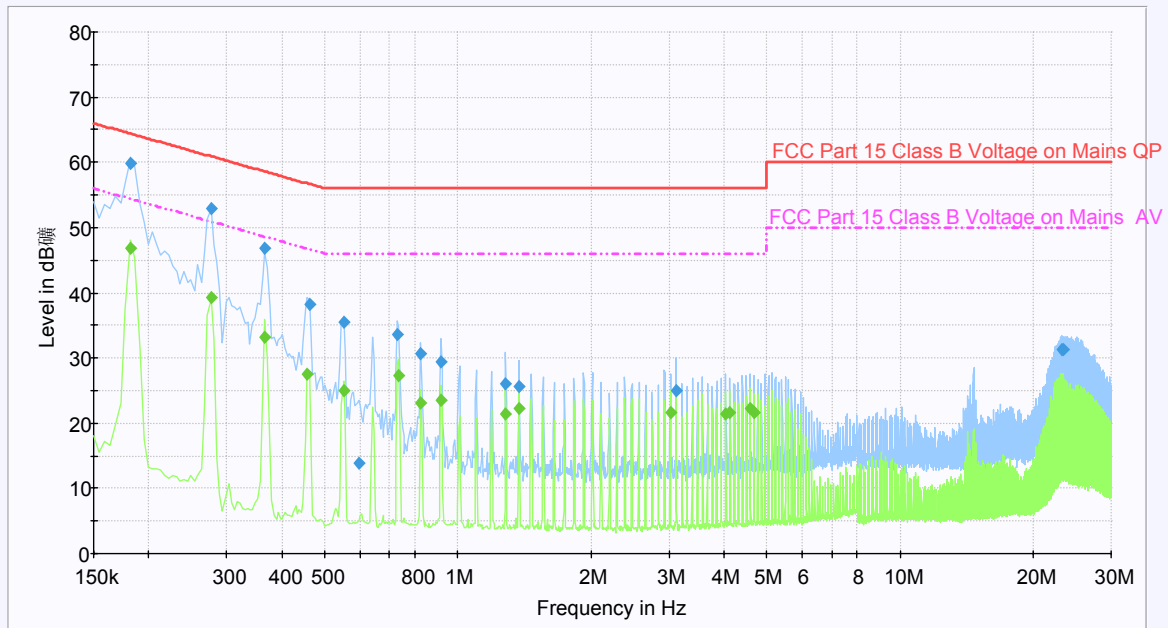
TEST REPORT N°: STM-09MA164ETHP

Measurement Data : Neutral

Test Result of (On mode, connected to PS2): PASS

Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.



Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.276000	52.9	N	9.9	8.0	60.9
0.460500	38.2	N	9.9	18.5	56.7
0.595500	13.8	N	10.0	42.2	56.0
1.284000	26.0	N	9.9	30.0	56.0
1.374000	25.6	N	9.9	30.4	56.0
3.115500	25.1	N	10.0	30.9	56.0
23.374500	31.3	N	10.1	28.7	60.0
Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.276000	39.2	N	9.9	11.7	50.9
0.456000	27.4	N	9.9	19.4	46.8
0.550500	24.9	N	10.0	21.1	46.0
0.825000	23.2	N	10.0	22.8	46.0
1.284000	21.3	N	9.9	24.7	46.0
3.025500	21.5	N	10.0	24.5	46.0
4.033500	21.4	N	10.0	24.6	46.0
4.672500	21.7	N	10.0	24.3	46.0



TEST REPORT N°: STM-09MA164ETHP

Frequency range of Fundamental Emission

Test Requirement: FCC 47 CFR 15.249
Test Method: ANSI C63.4:2003 (Section 13.1.7)
Test Date: 2009-03-28
Mode of Operation: Transmission continuously

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Limits for Frequency range of Fundamental Emission:

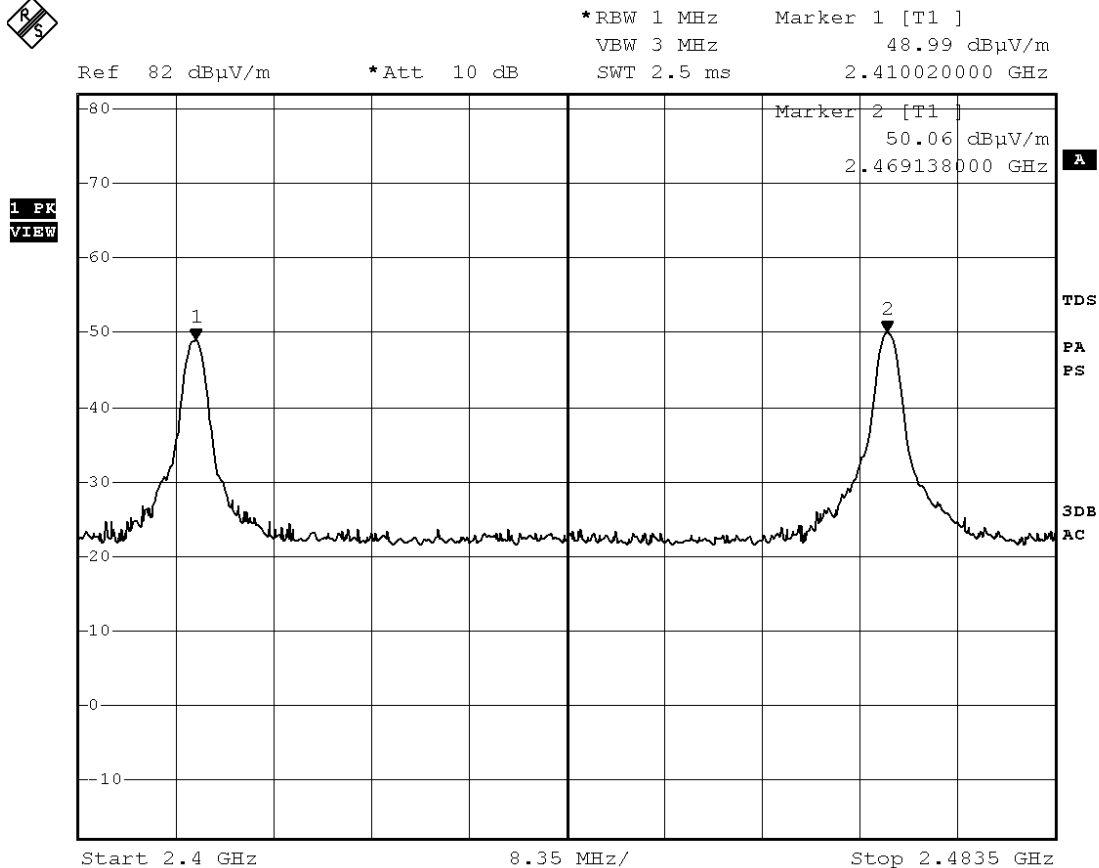
Frequency [MHz]	FCC Limits [MHz]
2410.00-2469.20	2400 – 2483.5



TEST REPORT N°: STM-09MA164ETHP

Measurement Data :

Test Result of Frequency Range of Fundamental Emission: PASS



Date: 5.MAY.2009 09:53:03



TEST REPORT N°: STM-09MA164ETHP

Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 29 (0.6msec) pulses. Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (29×0.6) per 100msec = 17.4% duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

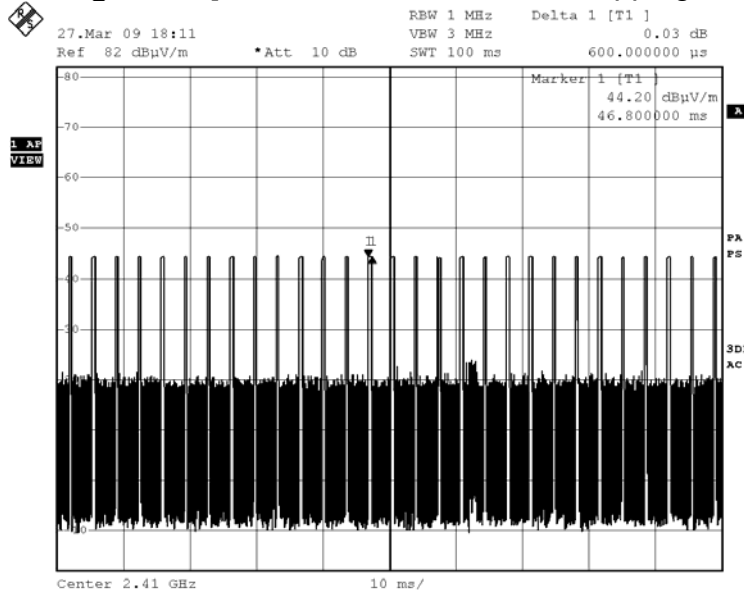
Remarks:

Duty Cycle Correction = $20\text{Log}(0.174) = -15.2\text{dB}$

The following figures [Figure A to Figure C] show the characteristics of the pulse train for one of these functions.

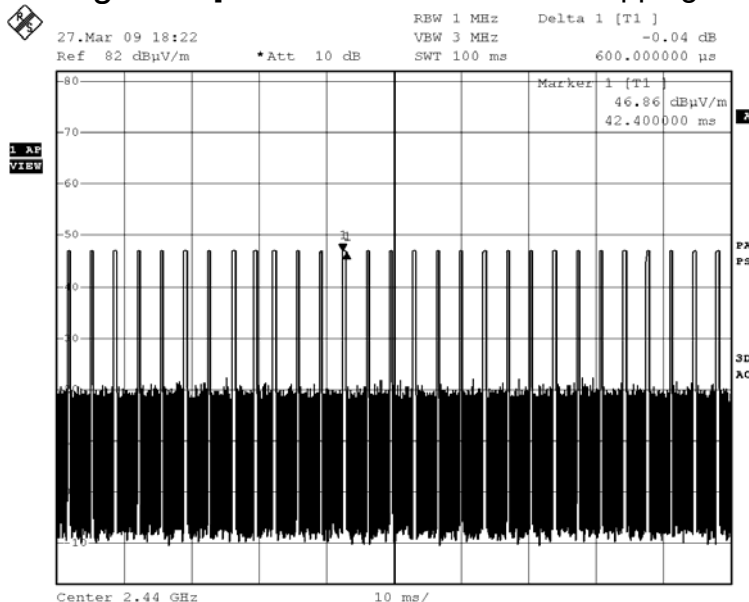
TEST REPORT N°: STM-09MA164ETHP

Figure A [Pulse Train of the lowest hopping channel]



Date: 27.MAR.2009 18:11:14

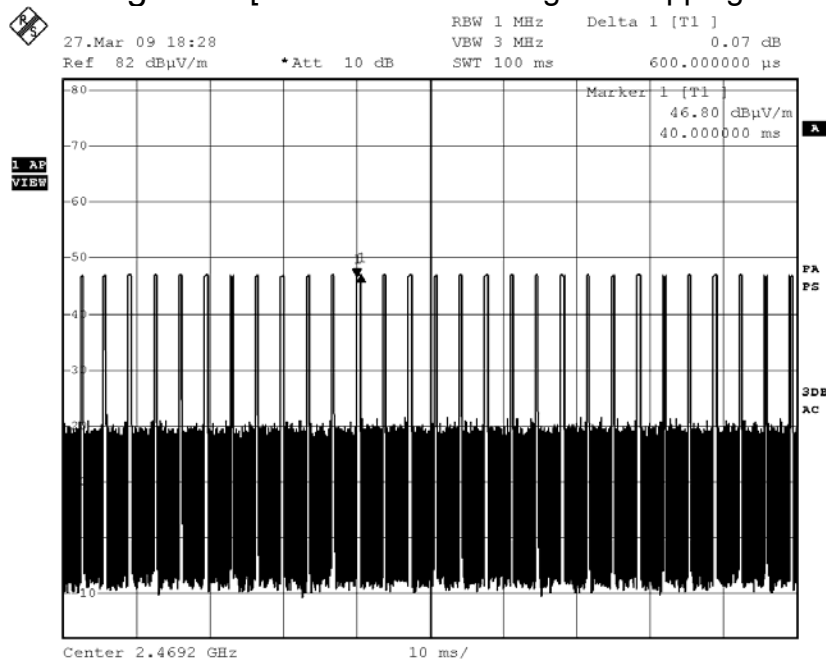
Figure B [Pulse Train of the middle hopping channel]



Date: 27.MAR.2009 18:22:45

TEST REPORT N°: STM-09MA164ETHP

Figure C [Pulse Train of the highest hopping channel]



Date: 27.MAR.2009 18:28:08

TEST REPORT N°: STM-09MA164ETHP

Photographs of EUT

Front View of the product



Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



Connected with PS2



Button of the product



TEST REPORT N°: STM-09MA164ETHP

Measurement of Radiated Emission Test Set Up



Measurement of Connected Emission Test Set Up



******* End of Report *******